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ARCHIVES OF PEDIATRICS

A MONTHLY DEVOTED TO THE

DISEASES OF INFANTS AND CHILDREN

JOHN FITCH LANDON, M.D., Editor

LEADING ARTICLES IN THIS NUMBER

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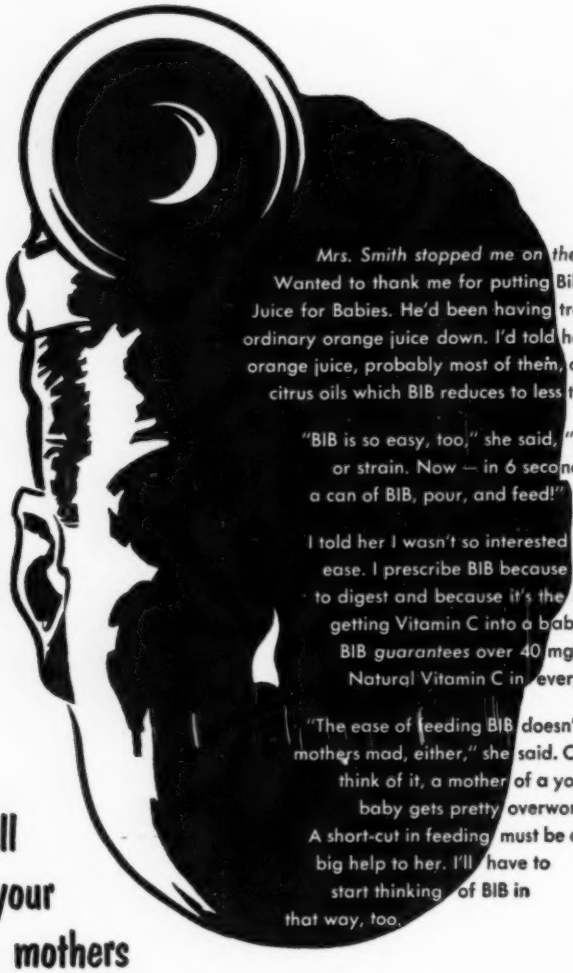

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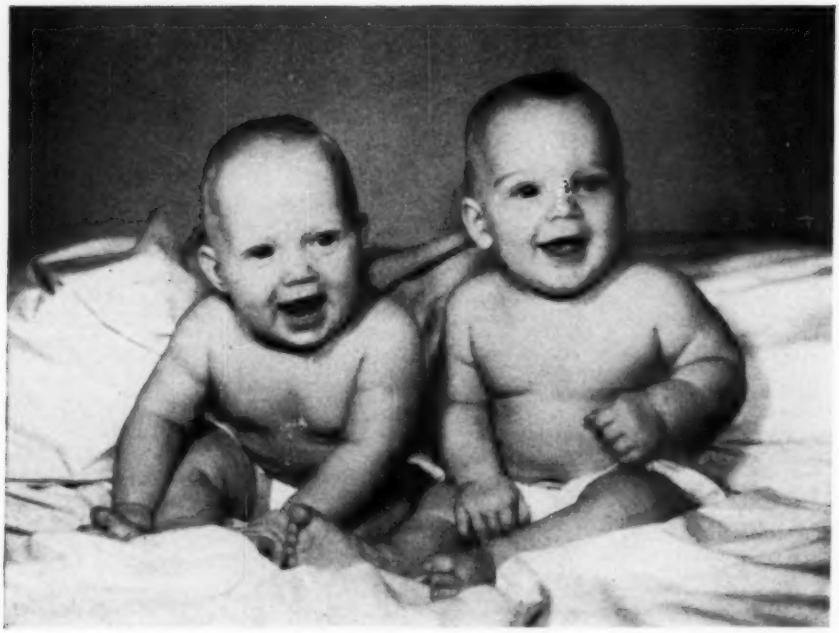

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Medal of Honor

Major General William F. Dean, Berkeley, Calif.—Medal of Honor

Sergeant Charles Turner, Boston, Mass.—Medal of Honor

Lieutenant Frederick Henry, Clinton, Okla.—Medal of Honor

Private First Class Melvin Brown, Mahaffey, Pa.—Medal of Honor

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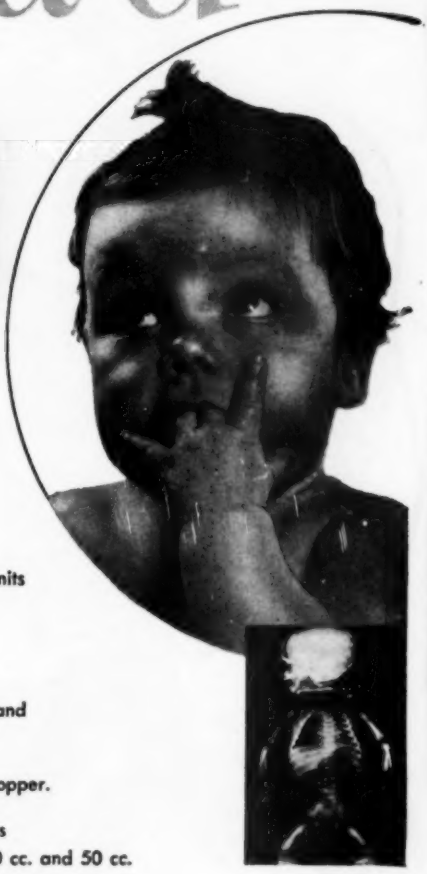

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1. Behrman, H. T., Combes, F. C., Bobroff, A., and Leviticus, R.: Ind. Med. & Surg. 18:512, 1949.

ARCHIVES OF PEDIATRICS

VOL. 68 NOVEMBER 1951 No. 11

JOHN FITCH LANDON, M.D., Editor

THE CONTROL OF COMMUNICABLE DISEASE AND ITS LIMITATIONS

J. C. GEIGER, M.D.

San Francisco.

The message to be put over about communicable disease should be in three words: namely, *confine, destroy, immunize.*

With all our promotion and advancements of science, we cannot escape these words of wisdom. Since we can see the path behind us and not the one ahead, we are likely to think of ourselves as always at the advancing front. This is often true only in point of time; on the clock and calendar, *now* is the latest point of advancement but not necessarily the furthest. There is ample evidence that regression is possible, say in morals or in other phases of social understanding. It is quite possible also to take side paths in ways of science. We have never been so perfect that we could avoid every blind bypath from which return was necessary. Errors are not deliberately made; they look like truth until they are found to be errors.

It is because trials and errors are unavoidable that the main roads are those which seem to be free from errors over long periods. We can return to these roads after any tentative excursion into the unknown and start from them again safely. We can today rely on the triad: confine, destroy and immunize.

In the past several decades there have been three principal pertinent phases of progress in communicable disease control. First, the viruses, aided by the lowly barnyard egg, have been the subject of much study . . . and a vast deal of advertising, in and out of science. Next the air became an object of microbiologic study.

Director of Public Health, City and County of San Francisco.

Third, sulfanilamide and other sulfa drugs proved to be only the shock troops for the advent of antibiotics . . . and with the antibiotics came propaganda so strong that it was not limited to innocent bystanders. As not infrequently happens, it affected the dispensers of propaganda themselves.

There is a fourth phase of development, separated because so much of it comes from nonprofessional sources. The entrance of publicity into medical fields has been overwhelming. With poliomyelitis leading off, cancer, the heart and cerebral palsy joined the chain reaction. As a result of elaborate publicity by oftentimes uninformed persons, unfortunate ideas have been sold: that the answers of science can be purchased if unlimited waste is no item, that nature itself will be forced to change if weighed down with enough dollars and that good in the hearts of donors is synonymous with physiologic recovery.

With all this, viruses are no more important than they were. Knowledge about them is increasing but the rules have not changed. Air-borne infection offers the same over-all problems, in spite of isolated experiments. Infectious disease, especially in case mortality, shows the effects of sulfa drugs and antibiotics, but these changes are accompanied by new and dangerous problems, especially in their promiscuous use as preventive agents.

Confine! It is still wise to reduce realistically the number of opportunities for the spread of a communicable disease. Our ideas about the techniques of quarantine change, but the principle of isolating the foci from which there may be spread, viruses, protozoa, worms, arthropods, rickettsiae, bacteria, spirochaetes, yeasts and molds, is still sound. Destroy! The destruction of these microorganisms is essential, whether the microorganism is a virus or the worm of trichinosis, and whether it was discovered a hundred years ago or yesterday. These two principles, which have often been made subservient to a series of dramatic discoveries, some of them not so dramatic as grossly dramatized, are sound in the ward and they apply as well at home and in the essential fields of sanitation, such as in the problems of water, food, restaurants, slaughterhouses or garbage cans.

Immunize! Oddly enough, the increased advertising of health, legitimate and otherwise, has produced more immunization along with weakened assurance of its efficacy. The increase in immuni-

zation, in spite of antibiotics, has not always been made wisely. Even so, the third member of the triad is solid. No one would suppose that immunization should be stopped; it *is* a basic landmark along the main road in epidemiology and a select preventive in so-called bacterial warfare now being so widely and even unwisely stressed.

Viewed from 1951, *confine* has come to emphasize the wall around the microorganism rather than around the patient. The quarantine sign on the door and the stature of the policeman have been subordinated to knowledge of where the organisms are, how they can be spread, and what they will stand. Quarantine was once a ritual, so many days of unhappiness and then fumigation. Now, although the law still requires definition, we are realistically lenient; yet we know that carriers of pathogenic microorganisms are more widespread than we once supposed. Exact knowledge of microorganisms permits considerable freedom; but it is still wise to confine them to a limited area when it can be done.

Destroy, in 1951 as in 1901, refers to the use of disinfectants and sterilizing equipment. The curve of use has not gone downward, nor does anyone think that it should. The destruction of microorganisms by heat, ultra-violet light, or chemical disinfectants, or by natural processes of sunlight, fresh air and cleanliness plays a tremendous role. Behind this word "destroy" is the thought that, after confining and destroying the organisms within the walls around a patient, there is still the vast outside world to consider. Some microorganisms are not confinable. They may be found on the edge of a glass, in a water supply, in an animal, in or on an insect, in food or milk, even in the ground, or most significantly but for significantly short periods, in the air. Ideally, we still must know when and where disease-producing microorganisms may be and when and how to destroy them.

Immunize, in modern parlance, still refers to only a few of the long list of infectious diseases. There is a diminished feeling of security with the practices of immunization in recent years among those who have to weigh such matters, yet procedures of immunization are pushed feverishly. Faith in smallpox vaccine, begun in 1796, is still high. Rabies vaccine, now over sixty years old, is looked upon more skeptically than any time since the day Pasteur

discovered it, but no one would remove it. Typhoid vaccine, much tampered with by theorists, still has not gained nor lost in the standing it began to earn in 1916. Diphtheria toxin-antitoxin mixture gave way to toxoid with no great change in results, results though now known to be definitely uncertain, still considered to be worth the effort. Cholera, especially involved in great religious migrations, and some features of plague remain as accepted despite the knowledge gained through rodents, rodent control and their associated insect vectors remain as baffling as ever, but immunization, particularly in cholera continues to be an accepted epidemiological factor. In the last two decades several new agents have been discovered or pushed. Yellow fever vaccine, useful among our citizens only to travelers, can be labeled a success. Vaccine for whooping cough, a world-wide disease, is not adequate but it is regarded as a "statistical" success; the odds favor it. Tetanus toxoid, designed to prevent a disease of extreme rarity, has a popularity that is quite remarkable considering the small number of cases that do occur in the United States. With direct reference to the presence of tetanus as a disease in the United States there is further comment needed.

The old course of events, and the one which presumably still holds for persons who have not had toxoid, was to inject purified horse serum containing usually 1500 units of antitoxin into persons injured in such a way that there was a reasonable likelihood of tetanus. This was and is objectionable on the following grounds: (1) Danger of serum reactions of two major kinds, (2) danger of paralysis, probably more frequent with this serum than with others, (3) expense, (4) transient value, if the injury required a long period to heal, (5) certainty that most injections were given to patients who would not have had tetanus without them, and (6) prostitution of medicine in that most injections were made because of possible repercussions in terms of compensation, legal suits, or reputations instead of in terms of true calculated medical risks. Although it can be said that most persons given antitoxin survived it without serious injury, it can also be said that most of them would not have had tetanus, and that the use of antitoxin does incur some hazard, deliberately incurred. Antitoxin is used far too often when its use could be curbed to real

calculated risks, in which case the chances that tetanus could be avoided probably weigh favorably against the possible hazards.

Neither antitoxin nor toxoid have merit in therapy, although in theory antitoxin saves borderline cases diagnosed early enough. The entire question revolves around the prevention of a rare disease, one which, when it does not occur and usually it does not, can be said to be prevented by antitoxin or toxoid, if either was used, without proof.

Tetanus toxoid has been used since 1933. Presumably two to four injections per person, followed by another injection at the time of presumed injury, will afford sufficient antitoxin to neutralize the toxin before the nerves are injured. Unlike diphtheria, the disease itself is due entirely to the toxin, so far as we know, Both the reasoning and the results appear to support toxoid as well as antitoxin as a preventive agent.

First, toxoid must be used in random fashion, since it must precede a conjectural accident to be of any use. Antitoxin, though often used with little on which to base judgment, is at least used only when there is a reasoned likelihood of tetanus within a short time. This favors antitoxin.

Second, the reactions following either product can be noteworthy. They are less likely to be severe with toxoid, though, because of random use, many more persons are affected. Compared to antitoxin, toxoid could be favored, even so. Compared to neither, toxoid has definite drawbacks.

Third, there can be little doubt that surgery, which has steadily improved, is more readily available, and is backed by antibiotics now, has been and will be the major factor in tetanus. Any move which restricts surgical supervision may well give more trouble than it can overcome by good, in terms of toxoid.

Fourth, with improved surgery the importance of minor injuries is increased, relative to tetanus. The percentage of cases following wounds which would not normally be taken to a physician increases, medically considered. Legally considered, however, the responsibility of a Department of Public Health presumably is accomplished adequately when medical service is demanded for injuries, and is available.

Fifth, the statistics must be weighed, though they so readily shift either way. In the five-year period 1934-38, used by Maxcy,

deaths from tetanus in males over 25 average 352 per year in the United States. Removing those over 55 reduces the figure to 257. Since San Francisco has almost exactly 1/200 of the population, our quota in this age group would be about three deaths every two years. As a matter of fact, during the past ten years in San Francisco, there have been five deaths (all males) from tetanus, two in 1941, one in 1942, none in 1943, one in 1944, none from 1945 to 1949, inclusive, and one in 1950. With 96,448 deaths registered in San Francisco during this ten-year period, it is clearly evident that tetanus is a rare cause of death in this city.

Sixth, I suggest that San Francisco may be favorably situated with regard to tetanus, based on its records and on the fact that we have a fog-washed atmosphere and get our over-all atmosphere from the Pacific with prevailing westerly winds, rather than from tilled fields. It is believed that the normal risks of tetanus in San Francisco are lower than the average for the United States.

Seventh, it appears certain that most of the popular talk about tetanus is not well founded. How many cases of tetanus were prevented last year by perhaps 5,000,000 injections of toxoid (as an uncalculated estimate)? Consider what the chances of infection are, and the somewhat uncertain evidence of the efficiency of toxoid. Put one way, would you take toxoid on an uncertain chance of protection and a chance, in your age group, of about one in 1,500,000? Put the other way, considering how few cases, if any, were saved by perhaps 5,000,000 injections, would you risk 5,000,000 injections on the theory that there is no harm and can be only good.

BCG vaccine for tuberculosis, in its twenty-eighth year, remains a subject of discussion. No one doubts that there are circumstances under which it may do some good, but there are sincere arguments over when and how these circumstances occur. Its world-wide use, now apparent, will create further problems and offer much data of value in the control of tuberculosis in far-away places without hospital or investigative or follow-up facilities of discovered and reported cases.

And so, the words "confine, destroy and immunize" still look good. In our techniques we would be wise to go back to them periodically and recheck our "progress." We have made progress, especially in our knowledge, but we have made and will make some

mistakes. Thus far science gives us better bases for our tchniques when we confine, destroy and immunize. Perhaps we are learning also that these principles, so easily learned, can properly be applied only with unlimited knowledge.

EPIDEMIC VIRUS MENINGITIS. (Deutsche medizinische Wochenschrift, Stuttgart, 75: 1652, Dec. 8, 1950). Bingel and Schuster describe an epidemic of a benign form of nonbacterial meningitis occurring in July 1949. Detailed studies were made on 142 cases, and diagnosis in an additional 120 cases was regarded as established. The ages of the patients varied between 5 months and 51 years, but the majority were children. The epidemic appeared suddenly, in a kindergarten, without being preceded by sporadic cases. This sudden appearance suggested an infection caused by food or water, but both of these factors could be ruled out. A severe headache was usually the first symptom. The temperature increased within a few hours up to 40 C. (104° F.) and usually decreased by lysis within two or three days. In about 10 per cent of the cases the temperature curve was of a biphasic type, an interval of from one to three days intervening between the two temperature elevations. Sore throat and edema of the uvula and palatine arch were usually present, and enlargement of the regional lymph nodes varied. Exanthems were never observed. Meningitic symptoms with stiffness of the neck and with positive Kernig, Brudzinski, Amoss and spine signs usually lasted for two or three days. Encephalitic disturbances were indicated by vertigo, somnolence or restlessness and temporary disturbances in the reflexes. Culture of cerebrospinal fluid and blood failed to reveal bacteria, but animal inoculations demonstrated a virus in the blood, cerebrospinal fluid and throat washings. This virus differs from that of poliomyelitis and choriomeningitis. It is suggested that climatic factors (hot, dry weather and dust) may have played a part. The incidence of the disease was greatest among those who had done harvesting work in field and garden. The field mouse may have been the virus reservoir, as the virus could be demonstrated in 20 per cent of 156 field mice.—*Journal A.M.A.*

SOLITARY BONE CYST OF HUMERUS*

Report of Case and Review of Some Current Literature

Max Kliger, M.D.
New York.

J. S., a white male, aged nine years, was admitted to City Hospital on October 18, 1948 with history of pain in the right shoulder after throwing a baseball. X-ray films on October 21, 1948 revealed evidence of a wide area of radiolucency in the upper metaphysis of the right humerus. There was evidence of trabeculation in this area. There was a fracture line evident on the lateral aspect in the lower third of the cystic area. The cortex was thinned over the cystic area. Conclusion: Bone cyst of humerus. Pathologic report (biopsy) November 4, 1948 of bone of right humerus: Two small particles of hard tissue. Microscopic: Portions of dense collagenous connective tissue. Diagnosis: Fibrous tissue. Discharge diagnosis: Bone cyst.

Patient was re-admitted on May 31, 1949 with complaint of pain in right shoulder and swelling of upper right arm. Examination revealed tenderness over the right shoulder and arm with restriction of abduction, external and internal rotation of the right shoulder and arm. Operation on June 16, 1949: Upper right humerus was easily entered through a very thin cortex, consisting of soft-granulation tissue. This area consisted of soft granulation tissue which was curetted, followed by normal saline lavage of the cavity. A bone graft and bone chips were removed from the crest of the right ilium and transplanted into the cavity of the upper right humerus. The patient made an uneventful recovery and was discharged on September 10, 1949 and followed up periodically at the Welfare Island Dispensary, with comparative roentgenographic studies of the right humerus. On June 7, 1951 the patient was symptom-free with a full range of abduction, external and internal rotation of the right shoulder and arm. There was no restriction of motion of the right forearm and elbow on flexion, extension, supination or pronation and the hand grips were strong and equal.

X-ray Films on June 2, 1949: Re-examination of the right humerus showed a multilocular cystic bone lesion with marked thinning of the cortex of the proximal end of the right humerus.

*From City Hospital, Welfare Island, New York, service of Dr. I. Kross.

There was distention of the humerus as compared with the roentgenographic examination of October 21, 1948. There was increased soft tissue thickening as compared with the previous exam-

Fig. 1. Preoperative x-ray film taken June 2, 1949.

ination. The lateral aspect of the humerus showed a minimal amount of periosteal reaction. Impression: Benign bone cyst of right humerus.

Pathologic Report on June 27, 1949—Biopsy of cyst of right humerus: Specimen consisted of several pieces of white tissue.

Microscopic: Bony trabeculae were normal. There was much loose fibrous tissue in the marrow spaces and no active marrow was present. There were numerous giant-cells scattered diffusely

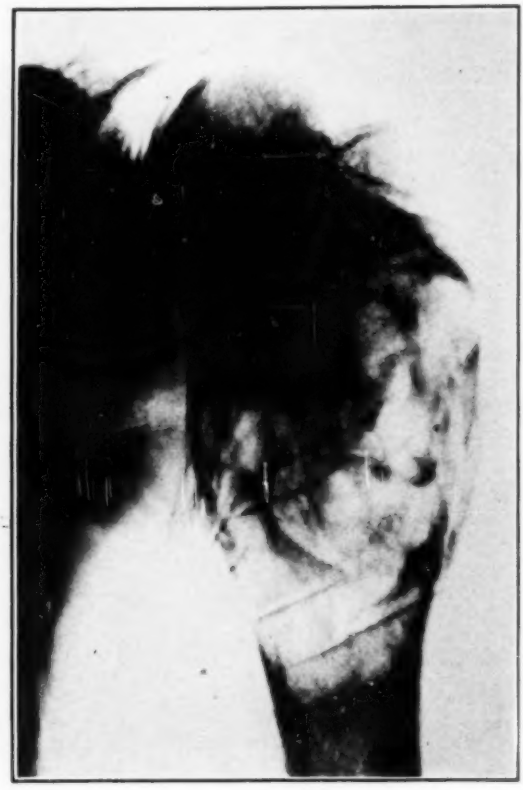

Fig. 2. Postoperative x-ray film taken June 21, 1949.

throughout the fibrous tissue of the narrow spaces, particularly surrounding bony trabeculae. The histology is similar to a giant-cell tumor of bone and osteitis fibers. Diagnosis: Solitary cyst.

DISCUSSION

Although solitary bone cysts can hardly be considered neoplastic growths, their similarity, especially roentgenologically to certain

Fig. 3. Follow-up x-ray film taken June 7, 1951.

types of bone tumor, arouses suspicions. Solitary bone cysts almost always develop during childhood or adolescence; occasion-

ally a solitary bone cyst will be seen in a patient older than twenty years, but it is probable that in such cases the cyst developed during childhood and was not recognized until a more advanced age had been reached. Symptoms are absent or mild in most cases, unless there has been a pathologic fracture. The pathologic appearance of bone cysts varies considerably. Occasionally the cyst will be filled with amber fluid and will lack a lining of connective tissue. More frequently the cyst will have a connective tissue lining and it may be multiloculated as the result of connective tissue septa. Some solitary bone cysts contain little fluid but are filled with connective tissue. Giant-cells are frequently present. The pathologic appearance in this type of bone cyst will closely resemble that seen in giant-cell tumor, and thus such lesions are referred to as the giant-cell tumor variant of bone cyst. In some instances, the pathologic diagnosis between bone cyst and giant-cell tumor cannot be made without consideration of the location of the lesion. Giant-cell tumors occur in the epiphyseal portion of the bone, developing usually after the epiphysis and diaphysis have united. Solitary bone cysts occur in the metaphyseal portions of the bone and develop before the epiphysis has united. There has been much speculation as to the pathogenesis of solitary bone cysts. None of the explanations is entirely satisfactory, and it is just as well to consider that the pathogenesis is not known. The roentgenologic diagnosis of solitary bone cysts is usually not difficult. They occur most frequently at the upper end of the humerus, femur or tibia, developing in the metaphyseal region of the bone and perhaps extending down somewhat into the diaphysis. There is often a fusiform widening of the bone owing to slight expansion of the cystic portion. Usually there are erosion and thinning of the bone over the cyst, and this thin shell of bone is always intact unless there has been a pathologic fracture. Occasionally, fine trabeculation can be seen in such a lesion, but most frequently this is not present unless there has been a pathologic fracture which has healed, leaving a partition of bone. Periosteal reaction is not present over a solitary bone cyst unless a fracture has occurred which has led to periosteal proliferation and formation of callus.

Pathologic fractures usually heal rapidly and in some instances the reparative process will cause the cyst to fill with bone and thus become healed. If this does not occur, a solitary bone cyst may be

the site of two or three pathologic fractures. During childhood, serial roentgenographic examinations may reveal that a bone cyst is gradually increasing in size. Such cysts usually reach a maximal growth before maturation, and increase in growth almost never occurs after twenty years of age. Sometimes a bone cyst will develop during childhood and reach its maximal growth rather early. After this the metaphyseal growth of new bone will progress without disturbance, so that the end of the bone grows, with the result that later in life the bone cyst will be situated in the middle third of the shaft of the bone. Such cysts are referred to as "latent bone cysts." They are usually found incidentally or as the result of pathologic fracture. When solitary cysts develop in bones other than tubular bones, the roentgenologic diagnosis is much more difficult and biopsy may be necessary. Solitary bone cysts must be distinguished from giant-cell tumors, fibrous dysplasia of bone, the cyst-like lesions of bone encountered in hyperthyroidism and chondromas of bone. The location of the solitary bone cyst, the age of incidence, and the normal appearance of the remainder of the skeleton should aid in making the correct diagnosis.[1] The solitary unicameral cyst is easily mistaken for giant-cell tumor on roentgenologic evidence alone, although the epiphysis is seldom, if ever, involved. When the lesion is reasonably early, the age incidence is a helpful diagnostic feature. There were eight cases in Pugh's series, the oldest patient being 21 years of age.

In the healing stage of a cyst there may be enough fibrous proliferation and giant-cell formation to present a histologic picture not unlike that of giant-cell tumor, but here again the giant-cells are usually not numerous and the fibrous matrix lacks neoplastic characteristics.[2]

1. Most giant-cell tumors of bone are benign, but an appreciable number become malignant or are malignant from the onset.

2. As most cases are seen before the tumor becomes massive, there are usually no contraindications to biopsy unless the lesion is surgically inaccessible.

3. Where the tumor is proved to be of the malignant type, it should be treated surgically. If the lesion is accessible, it should be entirely removed.

4. For clinical purposes the variants are considered giant-cell tumors in spite of the opinion of some pathologists that they are

not true giant-cell tumors. Many variants are located in cancellous bone, frequently in the spine. Fortunately they are usually successfully treated by radiation.

5. Tumors which appear clinically, microscopically and roentgenographically to be benign may be successfully treated by radiation. It is recognized where they can be readily approached; they can also be successfully treated by surgical removal.

6. In most cases it is not necessary to combine surgery and radiation. In structures, such as the spine, it seems to be a disadvantage to use curettage. Radiation alone produces calcification, which lends support to the involved area and results in an earlier cure. Cases which have been treated surgically and which recur should again be treated surgically, as they do not usually respond satisfactorily to radiation.

7. When tumors, previously diagnosed as benign, occur as malignant tumors, it would seem more logical to assume that the first diagnosis was incorrect than to assume that malignant changes occurred as a result of treatment, whether that treatment was surgical or radiological. There appears to be no justification for assuming that radiation as used at present induces malignant change.

8. With the comparatively small doses of x-ray used in the present-day treatment of giant-cell tumors, no damage should result to the epiphyses. A safe rule would seem to be when there is no damage to skin and soft tissue there will be none to the epiphyses.[3]

Seven patients with benign giant-sell tumors of bone have been treated by combined roentgen ray and surgical management. In each instance not only has the extremity been saved and there has been no evidence of recurrence of the tumor but the affected extremity is a useful member. Roentgen radiation therapy, as herein described, has not interfered with the reparative processes of the tissues following surgery.[4] The conclusion is drawn that the malignant degeneration of the giant-cell tumor of bone occurs in a limited number of cases (10-15 per cent) as a natural sequence of events unaffected by the type of treatment given.[5]

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HIRSCHSPRUNG'S DISEASE. (Lancet, London, 1:19, Jan. 7, 1950). Bodian and his associates present a new concept of the organic etiology of Hirschsprung's disease, which differentiates it from idiopathic megacolon. Hirschsprung's disease, a congenital condition, may manifest itself as an acute intestinal obstruction in the newborn and, if not fatal, may have a chronic course with acute attacks. Medical and surgical procedures, other than colostomy, failed to produce more than transient relief, since they were aimed at treating the hypertrophied dilated megacolon and largely disregarded the narrow segment distal to it. Histologic examination of the entire intestinal tract in fatal cases revealed complete absence of ganglion cells from the intramural plexuses of this narrow distal segment. It was postulated that this would impair coördinated propulsive movement and lead to secondary hypertrophy and dilatation of the bowel proximal to the site of the lesion. A new surgical technic for removal of the abnormal distal segment, rectosigmoidectomy, has been used so far in 26 children. Postoperative follow-up for 12 to 15 months of the first 12 previously reported cases shows a most encouraging improvement in the children's general condition and a return to normal bowel habits. Radiologic examinations also indicate considerable regressive changes in the volume of the full colon and the surface area of the collapsed colon. Rectosigmoidectomy was done in 14 additional patients during 1949, with 2 deaths. Nine children are making satisfactory progress, comparable with that of the former group, notwithstanding some technical errors resulting in complications in 3 cases. The last three operations were too recent to be evaluated. Histologic examinations in 28 consecutive cases of Hirschsprung's disease have revealed two striking structural changes in the distal "narrow" segment of bowel: (1) absence of intramural ganglion cells and (2) presence of abnormal nerve bundles in the customary site of the intramural plexuses. These changes are thought to be characteristic of the condition.—*Journal A.M.A.*

HEMOPHILIA IN CHILDREN: WITH A SUGGESTION FOR PROPHYLACTIC CONTROL*

Report of Four Cases

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The infant and child hemophiliac frequently presents difficult problems of both acute and chronic nature. Because of these problems or because of the seeming helplessness of the situation, the average physician is likely to avoid attempting to care for the hemophilic child. Certainly, to date, there are no specific curative measures to be taken but, under proper guidance and treatment, the hemophilic child may be more surely taken through to adult life and aided in reducing the morbidity associated with his condition.

During the past two years, we have had the opportunity of observing four hemophiliac children varying in age from five months to nine years. We feel that some of our observations may be helpful in the handling of our future cases, especially the response to frequent small transfusions of whole blood or plasma which has proved gratifying in at least one case. It is for these reasons we feel the following four case reports are justified.

Case 1. The family history was negative for any type of bleeding disorders and for consanguinity. This 9-year-old child was apparently normal from birth until about 18 months of age at which time he began to manifest abnormal bleeding tendencies, bleeding excessively from minor lacerations and incurring many hemarthroses. Between the age of 18 months and five years he had approximately ten episodes of hemarthrosis, all clearing spontaneously. Numerous laboratory studies during this period revealed only an abnormality in the clotting time. He received transfusions following severe injuries from the age of three years on. At about 7½ years of age, he was tried on a course of antihemophiliac globulin which was reported to have given a fair response but lasted only for a period of less than six hours. The

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final admission was in December 1949 when the child was approximately nine years of age. Two days prior to admission, he developed a sore throat and the day before admission it was noted that the left side of his jaw was swelling and that he seemed somewhat croupy. On the day of admission his mother noted swelling under his tongue which increased gradually throughout the day. No history of trauma could be elicited.

Physical Examination at the time of admission revealed a well developed, well nourished white male with no abnormalities other than that of the mouth and throat. There was a large hematoma under the tongue forcing the tongue almost against the roof of the mouth and beginning to encroach on the pharyngeal airway. There was a moderate amount of bloody saliva which was swallowed with some difficulty. The neck was symmetrically swollen anteriorly. It was decided that no operative procedure should be carried out until the clotting time was nearer normal. Immediately on admission, he was started on 250 cc. of whole blood which lowered the clotting time from 160 minutes to 40 minutes. The swelling in the neck and mouth showed no change. About 14 hours after admission, he suddenly developed gasping respirations, very faint heart beat, and expired within a few minutes of onset of this difficulty. An autopsy was performed about six hours after death and revealed massive collapse of the lungs bilaterally, and massive hemorrhage in the lingual, sublingual and neck tissues.

Comment. This case demonstrates, clearly, the many problems likely to be encountered during the first few years of life in the hemophiliac with no real attempt being made to help him through these years when vital bleeding is so likely to occur. This final episode of bleeding into the neck structures represents an uncommon complication[1, 2] and because of the high associated mortality[2] it is feared and every attempt should be made to prevent its occurrence. The mechanism of death in hemorrhage in this area appears to be encroachment on the carotid bodies. The most important factor in treatment is immediate recognition and control of the hemorrhage. Tracheotomy without control of the hemorrhage does not appear to reduce the mortality.

Case 2. Family History. Mother is a Creek Indian and there is no known white blood in the family for at least three generations. One maternal uncle died of a nosebleed and one maternal cousin

died of hemophilia. One brother, reported as Case 3, is a known hemophiliac.

This child was first seen at five months of age with physical signs suggesting meningitis. No organisms could be cultured from the spinal fluid and the final impression was that the child may well have had an intracranial hemorrhage. He was treated, however, with antibiotic therapy as well as multiple transfusions and showed complete recovery.

His final admission was ten weeks later following a fall of approximately one foot, four days prior to admission, at which time no evidence of injury could be determined. During the three days before admission, he showed gradual increasing irritability which gradually passed on into listlessness. There was one episode of vomiting on the day of admission.

Physical Examination on admission revealed a child who was irritable when aroused, with a tense fontanel, a slightly hypoactive right knee jerk and normal reflexes otherwise. The admission diagnosis was intracranial bleeding. He was given a transfusion immediately but showed little response. On the following day, with the clotting time less than 5½ minutes, bilateral, subdural and ventricular taps were performed. No bleeding was noted in the subdural spaces, but the ventricular fluid was under increased pressure and was grossly bloody and xanthochromic. Temporary improvement of a few hours duration occurred following the taps, but his condition gradually returned to what it had been previously. Bilateral burr holes were then done which revealed no subdural bleeding, but showed marked edema of the brain. The child withstood the surgical procedure well and was essentially unchanged following it. On the third hospital day he gradually became worse, developing slow labored respirations, weak pulse and bulging fontanel, and expired about 60 hours after admission. Autopsy was performed three hours after death and revealed the ventricles to be distended with fresh and old blood, marked edema of the brain and severe encephalomalacia.

Comment. This represents another case in infancy where no real attempt was made to protect during the period when injury is so common and the results of injury so dangerous. It is not surprising that in infancy fatal hemorrhage may be intracranial when one thinks of the many head injuries occurring during this

period, usually inconsequential to the normal child but lethal to the hemophiliac.

It is interesting that Case 2 and Case 3 were born of an Indian mother whose ancestry is known to be pure Creek for at least three generations. In our review of the literature we have found no mention of hemophiliacs occurring in the Indian race.

Case 3. This child is a sibling of child described as Case 2. He was apparently normal until 10 or 11 months of age when he was noted to bleed easily following minor injuries. The child was seen by a doctor who reassured the parents, and diagnosis was not made until he was approximately 14 months of age. He had relatively little difficulty for the next year, requiring only two or three small transfusions during that period. At approximately three years of age, he had a cerebral hemorrhage with a right hemiplegia and one month later another cerebral hemorrhage with left hemiplegia. Both cleared with no residuals. During the next year, he required three or four transfusions because of various injuries but had no serious bleeding. At the age of four years, he received penicillin by injection for an upper respiratory infection and developed a severe hemorrhage into the buttocks and thigh. This was treated with conservative measures and the hemorrhage gradually reabsorbed. There was a residual footdrop and muscle weakness of the left leg which gradually cleared with exercise over the next six-month period. Four months later he was again seen because of hemarthrosis of the elbow. This was again treated conservatively with complete recovery. At this time it was decided that some attempt should be made at prophylactic control of the bleeding tendency. It was decided to give 10 cc. of fresh blood at weekly intervals. Both parents were found to have compatible blood and were used as donors. Over the past 12 months this method has been used with good results. As long as the child received 10 cc. of blood weekly, his clotting time remained between 10 and 18 minutes. If, however, he was allowed to go as long as two weeks between transfusions his clotting time would be 45 to 60 minutes and at three-week intervals between transfusions, close to two hours. During this period he has had a few small subcutaneous hematomas but there have been no serious episodes of bleeding despite the fact that he has had numerous falls. There was one episode of hematuria which lasted about three days

occurring at the end of a period of three weeks without transfusions. This cleared rapidly with only the usual 10 cc. transfusion being given. There has, at no time, been any evidence of incompatibility of blood with the transfusions.

Comment. This case demonstrates, in addition to cerebral hemorrhage, the disability which may result from bleeding into joints from trauma and into muscles from injections. Although he had survived possibly the most traumatic stage of his development at the time frequent blood transfusions were started, he was still an active boy and those who followed him could not help being impressed with his lessened morbidity from bleeding. This clinical improvement was supported by laboratory evidence of a lowered clotting time.

Case 4. *Family History.* No evidence of consanguinity or bleeding tendency. One paternal uncle died at six weeks of age with an unverified diagnosis of leukemia.

This child was circumcised at three days of age and bled profusely afterward. The doctor in charge told the parents that he had cut a vein but bleeding continued for a period of about ten days. At five months of age he bit his lip and bled for two days despite cauterization. At 13 months of age a diagnosis of leukemia was made and later changed at another hospital to hemophilia. He was first seen at this installation at 14 months of age, at which time he demonstrated a clotting time of between 90 and 100 minutes. This time would fall to 30 minutes after 10 cc. of fresh blood. Both mother and father were found to have compatible blood, and he was started on weekly transfusions. His clotting time remained elevated, however, and it was decided that he should be tried on transfusions twice weekly. This was continued over the next four to five months with the clotting time ranging from 25 to 45 minutes. During this period of time he had numerous falls, one of 4 to 5 feet, without developing any severe bleeding. On bi-weekly transfusions his clotting time remained elevated. About five months after the start of therapy, he began developing more hematomata and was tried on lyophilized plasma, receiving 100 to 250 cc. twice weekly. The hematoma cleared and he did not subsequently develop any new ones, but the clotting time still remained elevated. Studies for irregular agglutinins in the child's

blood were done six months after onset of transfusions and it was not possible to demonstrate any type of incompatibility.

Comment. This case demonstrates the great difficulty in controlling hemorrhage during the traumatic stage of development in a most active youngster. It is difficult to claim improvement or better control by frequent small transfusions in this case, even though his clotting time could be considerably lowered by this method, because he continued to have episodes of bleeding. His activity, however, results in injury which might be serious to the non-hemophilic child. It is the definite impression of those following him, however, that his course is considerably improved with the use of plasma and it is our intention to carry him with this method until he reaches an age when awareness of trauma is developed.

DISCUSSION

The use of whole blood or plasma in the preparation of a hemophilic patient for surgery or in treatment of acute bleeding is well recognized as good treatment and is usually beneficial. The young child hemophiliac is frequently traumatizing himself, often unknown to the parent, and bleeding goes unrecognized until evidence of it in vital areas, as in cerebral hemorrhage, is well established. It is often too late to prevent the disabling sequelae after the hemorrhage has occurred and it is for this reason one seeks a method for constant control of bleeding in the young active child with hemophilia. Alexander and Landwehr[3] showed that in vitro, maximum clotting effect of normal serum on hemophiliac blood could be obtained by using 0.001 cc. of normal serum per 1 cc. of hemophiliac blood. Larger amounts did not prove to give better results. Since a child has approximately 100 cc. of blood per kilogram body weight, 0.2 cc. of fresh whole blood per kilogram body weight might be expected to give maximum lowering of the coagulation time. Johnson,[4] and Alexander and Landwehr[5] have shown that the use of lyophilized plasma, one to four times weekly, resulted in marked improvement in their cases. In two of our cases we have used whole blood, 10 cc. at weekly intervals, and feel a definite improvement occurred in one case. The other appears to do somewhat better, both clinically and by clotting

time determination, when lyophilized plasma is used. We prefer the use of whole blood because of the simplicity of technique. At least one member of the family will be found to have compatible blood and, by means of direct transfusion, a small amount of blood may be given in a very few minutes.

The only deterrent to this type of prophylactic treatment is the possible development of a circulating anticoagulant as already detected a few times by Munro and Jones[6], and Craddock and Lawrence[7]. We feel, however, that the benefit derived from such treatment in some cases justifies the chance taken of such anticoagulants developing.

SUMMARY

Four cases of hemophilia in children have been presented showing many of the problems and complications which may arise in the hemophilic child. One of them expired as the result of hemorrhage into the structures of the neck and a second one following interventricular hemorrhage. Neither of these children had the benefit of attempted prophylactic control. Two other children, receiving weekly small direct transfusions of whole blood, are living and one of these has been definitely benefited by this method of treatment. The second received questionable benefit by weekly transfusions, but his course appears to be improved with weekly transfusions of lyophilized plasma. It is felt every hemophilic child should have the benefit of a trial of frequent small whole blood transfusions in hopes that he may be helped through the traumatic years of childhood with the least morbidity and hemorrhage residual possible.

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THIS, THEY WOULD CHOOSE TO DO*

A Challenge and a Plea

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Before Johnny entered first grade he was the talk of the neighborhood. And little wonder! At Sunday School on festive days he recited long poems with nary a bobble. His intellect seemingly was without bounds. The multiplication table was "duck soup." Sure, he could rattle off the alphabet.

In short, Johnny had photographic ears. What he learned at his mother's knee was his forever. It was the same way with the near-prodigy, Mary. Before she saw the inside of a school room, Mary played the piano at recitals; of course it was by ear—but she performed with delight. It appeared nothing was too difficult for Mary's auditory faculties to circumvent—and retain.

Folks said Johnny would be a justice of the Supreme Court, or a United States Senator. Mary, indubitably was headed for topflight leadership in the world of women. How could they miss?

Chapter *2* finds Johnny and Mary starting to school. Kindergarten was a lot of fun. Then came first grade where the child is taught to distinguish words from certain combinations of letters—reading. Brace yourself! Johnny and Mary funked!

Children of average mentality and below-average I.Q.'s (Intelligence Quotient) in their classes picked up reading soon enough. There were just no two ways about it. Johnny and Mary could not bridge the gap between the printed primer and their previous superior performance. Patient teachers couldn't impart this simple faculty to their nimble little brains; special tutors fell down. What in the world was the matter?

The detective student will say, "Why, that's simple. The kids need glasses. How in the world can you teach that "c-a-t" means "cat" when their eyes are completely out of focus because their vision is distorted?"

Shock No. *2*: Johnny and Mary had their eyes examined. Expert oculists agreed that each tested out 20-20 which is perfect vision by medical standards.

*From the Department of Ophthalmology, Northwestern University and Dyslexia Memorial Institute. The Institute is an independent non-profit corporation—Northwestern University furnishes space for its use.

It should not be concluded that only the exceptionally brilliant tots are in a class by themselves when some of them fail to assimilate the printed word. Many children in all I.Q. ratings are quite unable to decipher the printed page even though many of them have 20-20 vision.

The root of the trouble is a quirk in the intellect, a short circuit, caused by any one of a number of abnormal factors, or of a combination of factors, physical, emotional, poor teaching or otherwise. This inability to grasp the fundamentals of printed symbols even though the child's intelligence may be normal or superior, or shall we say, "reading retardation," is called dyslexia. The abnormal causative factors are *functional,* observable, preventable and correctable, in contradistinction to alexia (inability to read, due to a brain disease, or lack of intelligence). Dyslexia must not be considered simply as reading disability. It has many ramifications. In studying all symptoms the physical status, as well as personality and emotional maturation and stability of the subject, must be explored closely—and patiently. In this investigation cognizance must be taken of the eccentricities of character and conduct of the occupants of the home, and especially the environmental medium in which they live—not only at home, but in school as well.

Revelations that their child cannot learn to read comes as a chilling shock to conscientious parents. Here at Dyslexia Memorial Institute are received the anguished pleas of parents whose children are afflicted with dyslexia.

"I have a son, 14 years of age, who is not learning to read," an Omaha, Neb., mother wrote. "I am a widow and this boy is the youngest of five children. I am working as an office nurse, and will do everything possible to help my son find his place in the world." From St. Louis, another mother pens: "It is heart-breaking for our only girl to grow up this way. I just can't give up without trying everything. We live on a farm and are just folks of moderate means."

While symptoms of this trouble often appear in the first or second grade, the greatest setbacks occur in the fourth, fifth and sixth years of school life, and are astoundingly evident in college or adult life. Dyslexia shows no preference for any particular social strata! The Institute recently examined a physician, 30 years old, who, strangely enough, cannot read adequately. His entire medical educa-

tion was acquired almost by ear, and an exceptional retentive memory. During the psychological tests he was cooperative and enjoyed the experience. He was particularly happy when he was successful! Verbal responses were very slow, but when responses required action and manipulation they came very rapidly and accurately. The speed and precision with which he solved non-verbal problems were extraordinary. Verbal responses showed lack of maturity. He could not see essential likeness between a dog and a lion. To him the greatest similarity between an orange and a banana was the thickness of their peels. The patient had a wide range of information, good common sense and a fairly good vocabulary. He possessed a good memory span, but his difficulty was concentration. Digits, to be repeated backwards, gave him trouble. Reading achievement tests showed that knowledge of the meaning of words was inadequate and groups of words in paragraphs were difficult for him. When given time to study a paragraph before reading it, he did very well. He spent five minutes studying a paragraph consisting of a few lines of instructions, and then read it rapidly and perfectly. At the peak of his performance his achievement was on the eight grade level in paragraph meaning, and the eleventh grade level in word meaning. Primarily, the most outstanding psychological characteristics of this patient were the wide differences between verbal (verbal IQ, 117; vocabulary IQ, 105) and non-verbal intelligence (performance IQ, 152). Secondly, his ability to remember digits forward was average but difficulty in reciting them backwards was marked. The patient was very sure of his importance.

An informed public should regard with alarm the reading retardation of its school population. In July 1945 there were thirty-six million children under fifteen years of age in the United States and of these who are in school fifteen to twenty-five per cent have some degree of dyslexia. In 1947 there were 3,900,000 births—a 54 per cent increase over the five years preceding the Second World War. By 1952 nearly a million more children than in 1946 will be ready to enter school—an increase of 36 per cent.

What then, is the solution for a problem of such large proportions? To motivate this discussion it might be well to examine the implications of a resolution adopted unanimously by the Section on Pediatrics of the American Medical Association in June 1949.

It states: "Whereas 75 per cent of the care of children is in the hands of the general practitioner and that about one-third of the work of the general practitioner is in the field of pediatrics there should be developed a regular examination in pediatrics by the various state boards of medical licensure to encourage students and interns in informing themselves on the care of children." Up to the present time only a few medical journals have published treatises on dyslexia, and so physicians are not informed on this topic nor aroused to its urgency. Nor are they familiar with the intricate and bizarre peculiarities manifested in the health, emotions and slow-learning of those afflicted with dyslexia.

The difficulties inherent in this problem demand a realignment of the approach to its solution so as to coordinate all the facilities at hand to achieve maximum results in directing the education of a dyslexia-burdened child. Obviously, independent viewpoints could not affect satisfactory evaluation of the situation. With this in mind the staff of Dyslexia Memorial Institute has established a unique and challenging technique which has demonstrated in the last eleven years what can be done by concerted effort.

There is no question but that the best treatment is offered by those genuinely interested in any enterprise. Personal concern by members of an organization which undertakes the correction of dyslexia must be the unqualified prerequisite for membership on the staff. It should consist of—as a minimum—an internist or pediatrician, a psychologist, a psychiatrist, an otolaryngologist, an ophthalmologist, educators, a specialist in speech correction and a social service worker. This group of experts must work together and analyze the professional opinion of each. Following the examination of the patient by each of the staff members a conference is held at which each examiner reports findings, analysis and treatment—all of which are checked and doublechecked by each examiner. No program for the patient's welfare is undertaken until a consensus of agreed opinion is crystallized on each individual case.

After the plan of treatment is formulated a conference is held with the parents. The findings are given them and an explanation presented in support of recommendations made pertaining to treatment. Children and parents then are instructed to return for weekly treatments and counselling as necessary by those staff

members who are concerned. This close association of the staff distinctly improves the schedule and enhances progress. For, assuming the child has low thyroid functions, a weak ability to turn the eyes inward for near reading, the need of a special study with a tutor, psychiatric guidance and voice training—and many times such a group of factors are found which need special attention—all may be cared for in one afternoon's call. Otherwise, it would require a daily round of visits by the child thereby greatly minimizing his time of play. Too, the expense would be enormous. But under the staff plan in vogue at Dyslexia Memorial Institute it in no way interrupts the student's regular school activities.

Many parents are prone to place the blame for their child's failure entirely upon the teacher. As a result there develops a conflict between them. It is in these trying circumstances the services of others are valuable in helping parents and teachers find a new perspective. In our experience, almost without exception, persons who are concerned with the child not only welcome a guiding hand but are willing to cooperate in the establishment of a wholesome attitude within the boy or girl.

Only in recent years has the medical curriculum focused attention on the influence of social and environmental factors in the prevalence of disease. It has paid little heed to the influence of these elements coincidental with the physical status of the child concerning his reading and learning ability. It is most important physicians manifest an awareness of the importance of these factors in the practice of their profession.

Pediatricians receive training embracing normal growth and development, the feeding and care of healthy children and, to some extent, alignment of usual problems of social and emotional adjustment. Pediatrics should be concerned with all aspects of child life, from birth through puberty, including education. This group constitutes about 25 per cent of our population.

Pediatric neurology and child psychiatry are the principal specialties still taught solely by departments, other than the pediatric department in any considerable number of schools. In recent years efforts to overcome this defect have been made in some schools of medicine through horizontal integration. This initial step often has been in the form of correlation clinics in which

clinical and preclinical staffs participate. And yet, there are but eleven pediatric departments which include a trained child psychiatrist among their staff members! Probably Northwestern University Medical School stands alone in its awakening to the possibilities of promoting a fuller understanding of dyslexia. An interest was aroused by means of incorporating lectures of several hours duration in the postgraduate course in opthalmology.

Until very recently little interest has been shown in these "forgotten children," who have great potentials. One has only to compare the tremendous services available to the mentally deficient or those afflicted with tuberculosis or rheumatic fever to realize how really forgotten these children are. Funds for the diagnosis and care of dyslexia children are practically non-existent.

Medical education faces a crisis as a result of inadequate financial support. The gross budgets of all 70 medical schools in the U.S.A. for the year 1946-47 were approximately $45,000,000. The sum of the budgets of all pediatric departments for the same period was $3,094,000. Of this amount, only about half—$1,553,000—was allocated to pediatrics from the general medical school fund. The other half came from endowments, governmental and private grants, hospitals and miscellaneous sources. And, not one iota ever has been earmarked for the study of dyslexia!

Every state university and state teachers college together with the 70 medical colleges should have services available for these deserving little patients.

The economic burden imposed upon society by the failures of these children is incredible. Even if the same ratio of failures continues, and there is every reason to believe there will be a marked increase as a result of the influx of children to the schools in 1952, there will be approximately 423,500 failures in the first grade in 1953. Reckoning the cost at $75 for each child, the *failures* represent approximately $31,752,500 investment of taxes for that grade alone. For the elementary grades it would amount to about $244,020,000!

The results achieved at Dyslexia Memorial Institute have been highly successful with but few exceptions. It is particularly gratifying to observe the improvement in the child's work, his emotional adjustment and in many aspects of the family life. Where one considers that the average age of these patients under

treatment is twelve years three months, it is evident that they have been floundering around six or seven years, to say nothing of the financial burden of such waste. The added financial burden, due to these failures is enough to cause grave concern. But the extra load thrown on the teachers and its distraction from efficiently teaching the normal learning child is worthy of much greater consideration.

It is reasonable to believe out of this experience that most cases of dyslexia can be corrected early in school life if a proper approach is made, for these children had an average I.Q. of 108; they did not lack intelligence. Only children with I.Q.'s higher than 85 are accepted as patients.

In the last analysis it is the family physician upon whom we must depend to extend these services in the rural areas where 5,000,000 children between five and fourteen years of age are far removed from available services. Two-thirds of the more than 3,000 counties in the United States are rural. Is it too much to hope that with the rapid decrease in diseases which attack children, the family physician will find time to extend his interests and energies into the field of preventive medicine, especially that related to the education of children.

The many interesting connotations gleaned from the phenomenal achievements of physicians in preventive medicine must spark the imagination to inspire all necessary branches of science to take—and again let it be emphasized—greater interest in these normal or superior intelligent children who are in trouble.

To paraphrase an appeal made many centuries ago: "Won't you come over into Macedonia and help these children recover their gifts and abilities". Then, our young patients can read with pleasure for themselves. This, they would choose to do! !

339 *East Chicago Avenue.*

FURTHER STUDIES OF VITAMIN B_{12} IN REPRODUCTION AND LACTATION*

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Recently the author found[1] that on a diet, the proteins of which were furnished by 50 per cent low-fat soybean flour, which was satisfactory in all dietary essentials for very good growth of the albino rat, was only partially successful for reproduction and lactation in the first generation. In the second generation this diet was a marked failure for reproduction and a complete failure for lactation. The supplementation of this basal diet with folic acid resulted in a remarkable improvement in reproduction but lactation efficiency was poor. The addition of vitamin B_{12} in minute amounts produced a marked increase in lactation efficiency, which was manifested in first, second, third, and fourth generation animals. In this communication the results of further studies on vitamin B_{12} in reproduction and lactation are presented.

This investigation was conducted on the Wistar strain albino rat. The general biological procedure, i.e., age and weights of animals in the initiation of the experiments, composition of rations, etc., were the same as outlined in a recent publication.[1] There were 15 females and 3 males in each group of animals.

For a continuation of the studies on the influence of vitamin B_{12} on reproduction and lactation, the infant breakfast food, Cerevim, was chosen as the main component in the basal diet, because it is abundant in good quality proteins, minerals and vitamins, and has an appreciable amount of non-fat milk solids, which Hartman, Dryden, and Cary[2] showed to be a good source of vitamin B_{12}. It was anticipated that a ration containing the larger part of this breakfast food would be a good source of vitamin B_{12} for growth but that it might contain an insufficient amount of this vitamin for successful reproduction and lactation. It has the following composition, percentagely: Whole wheat meal, 43; oatmeal, 29; non-fat milk solids, 10; wheat germ, 10; corn meal, 5; barley, 0.9; dry brewer's yeast, 1; sodium chloride, 1; and malt, 0.1. To each

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ounce of this product are added 0.6 mg. thiamine chloride, 0.9 mg. riboflavin; 6 mg. nicotinamide; 8.5 mg. reduced iron and 300 mg. calcium carbonate. The approximate analysis is as follows: Protein, 19; fat, 1.5; ash (minerals), 5.5; moisture, 6; crude fiber, 2; phosphorus, 0.5; iron, 0.03; copper, 0.001 and calories, 104 per ounce.

The following is the percentage composition of the basal ration used: Cerevim, 94; vegetable shortening, 4; cod liver oil, 2. This ration furnished the proteins, minerals, and all the components of the vitamin B complex with the exception of vitamin B_{12}. During pregnancy and lactation supplementary vitamins A, D and E were

TABLE 1.

Further Studies of Vitamin B_{12} in Reproduction and Lactation (15 Females in Each Group)

Source of Protein	Reproduction period (days)	Sterilities	Young born alive	Young born dead	Number of litters	Young given to rear	Young reared	Per cent young reared
94 per cent Cerevim	174	3	125	30	21	94	41	43.6
94 per cent Cerevim + vitamin B_{12} (First generation)	179	3	195	5	21	118	87	73.7
94 per cent Cerevim + vitamin B_{12} + folic acid* (Second generation)	130	5	63	0	9	53	53	100.0
84 per cent Cerevim + 10 per cent dried skim milk	140	0	187	0	19	114	104	91.2
93 per cent Cerevim + folic acid* + 1 per cent APF (First generation)	145	4	126	3	13	78	75	96.2
93 per cent Cerevim + folic acid + 1 per cent APF (Second generation)	168	2	114	5	16	80	57	71.3

*The following were the daily doses of folic acid administered: 10 μg per animal for growth; 20 μg during period of reproduction; and 40 μg during the lactation period.

administered separately from the ration with halibut liver oil and tocopherol concentrate in doses previously outlined.[1] One group of 3 males and 15 females received this basal ration with the vitamin supplements mentioned and another group of the same number of males and females were given in addition daily per animal 0.1 μg of vitamin B_{12} during growth, 0.2 μg during reproduction, and 0.5 μg during lactation periods. In another group the influence of increased amount of non-fat milk solids (skim milk) was investigated by replacing 10 per cent of the breakfast

food with an equal amount of dried skim milk; and in another group the influence of the addition of small amounts of the animal protein factor (APF), which was a by-product of the manufacture of aureomycin, was studied by replacing 1 per cent of the breakfast food with an equivalent amount of the APF. These results are summarized in Table 1.

Lactation efficiency was measured by the percentage of young reared. The nursing young which did not survive died during the first three days of lactation with their stomachs full of milk, which indicates that the infant mortality was due to poor quality rather than to insufficient quantity of milk supplied by the nursing mothers, apparently because of vitamin B_{12} deficiency.

It will be noted that vitamin B_{12} supplementation markedly reduced the number of stillbirths and increased lactation efficiency by 30.1 per cent in the first generation of the group of animals on the 94 per cent breakfast food-containing ration. In the second generation the further supplementation of the basal ration with folic acid resulted in 100 per cent lactation efficiency.

The replacement of 10 per cent of the breakfast food with an equivalent amount of dry skim milk resulted in an excellent lactation record, in the absence of vitamin B_{12}. It is also evident from Table 1 that replacement of 1 per cent of the breakfast food with an equivalent amount of the APF product produced excellent lactation efficiency and must have replaced the increased needs of vitamin B_{12} for lactation in the first generation. However, there was reduced lactation efficiency in the second generation, even in the presence of folic acid supplementation.

SUMMARY

The infant breakfast food, Cerevim, when fed to the extent of 94 per cent in the ration, proved an adequate source of proteins, minerals and vitamin B complex for successful reproduction and lactation of the albino rat when supplemented either with minute doses of vitamin B_{12}, 1 per cent of the animal protein factor in the ration, or when the content of dry skim milk in the ration was doubled.

We wish to express our appreciation for the crystalline vitamin B_{12} to Merck and Company; for the Cerevim breakfast food to the M & R Dietetic Laboratories; and for the animal protein factor product to the Lederle Laboratories.

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PINK DISEASE OR INFANTILE ACRODYNIA. (Medical Journal of Australia, 1: 107, Jan. 28, 1950). Cheek and Hicks report on 37 children with pink disease or infantile acrodynia. Seventeen of the children between the ages of 6 months and 4 years are reported on in detail; 16 were rapidly restored to normal health. Pink disease or infantile acrodynia is a syndrome of disturbed adaptation of the vegetative adjustment to postfetal life. It is characterized by hypofunction of the suprarenal gland, which is responsible for a lowered renal threshold for sodium chloride. Excessive loss of sodium chloride from the extracellular fluid leads to relatively increased electrolyte concentration in the tissue cells, with consequent movement of water from the extracellular phase, leading to cellular turgor and hemoconcentration. The complexity of symptoms and signs may be elucidated in terms of hemoconcentration, raised blood viscosity, diminished blood volume and tissue anoxia, together with ionic imbalance between extracellular and intracellular phases. Diarrhea and vomiting, by rapidly accelerating water and salt loss, can precipitate vascular shock because of excessive hemoconcentration and failure of venous return. Gastric lavage and also the intravenous administration of hypotonic sodium chloride solution, even with added dextrose, are therefore dangerous. Evidence indicates that supervening "gastroenteritis" is a manifestation of salt-water imbalance and disturbed carbohydrate metabolism aggravated by low colloid osmotic pressure of the plasma due to hypoproteinemia. Recognition of suprarenal hypofunction as causal or aggravating influence in pink disease is important for effective treatment. Oral administration of sodium chloride, with or without desoxycorticosterone acetate, depending on the duration or severity of the disease, will restore the salt-water balance with complete and rapid abatement of symptoms. Prevention can be insured by oral administration of salt alone in the prodromal stage.—*Journal A.M.A.*

PEDIATRICS HALF A CENTURY AGO

From time to time the Archives, which was the first Children's Journal in the English language, will reprint contributions by the pioneers of the specialty over fifty years ago. It is believed that our readers will be interested in reviewing such early pediatric thought.

INTUSSUSCEPTION*

Report of Two Cases in Boy Six Years and Girl Nine Years of Age

Francis Huber, M.D.

New York.

In acute cases, with classical symptoms, a diagnosis of intussusception does not, as a rule, offer any great difficulty, provided, of course, the possibility of its occurrence be kept in mind. In discussing the subject it is well to recall that first, the most frequent cause of acute intestinal obstruction in infants is the lesion now under consideration; second, the diagnostic symptoms are due to the existing obstruction or strangulation. A study of a series of cases shows that the younger the child the earlier symptoms develop.

In older children the picture is less pronounced. Invagination in them does not necessarily produce, or give rise to, early obstruction and strangulation, consequently the characteristic signs are more or less modified or even delayed. In chronic cases acute manifestations are absent. In fact the entire process is characterized at times by "extreme latency of symptoms." The presence of a tumor, possibly some slight hemorrhages at intervals, extending over long periods, may be the only evidences. Cases are reported in literature in which a tumor could be mapped out and in which pains recurred in paroxysms at varying intervals for months and months. Occasionally vomiting would occur. At no time, however, was there any interference with the action of the bowels, nor was any blood, mucus, or other abnormality, noticed in the movement.

The anatomical variety which favors a chronic course, is that in which the apex of the intussusceptum is formed by some part

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of the cecum, the cecocolic form, or when the colon itself is involved.

One form of the socalled prolapse of the rectum is practically a chronic intussusception of the upper into the lower part of the bowel.

Within a period of a few months, 2 rather unusual cases have been met with in practice. In the first, the diagnosis was not made until after the abdomen was opened. In the second a positive diagnosis was arrived at and confirmed at the operation.

For the following history I am indebted to the attending physician, Dr. Joseph Huber.

Case 1. Nathan U. seen for the first time Sunday, Jan. 25, 1903. (The prior history having no bearing on the present illness, is therefore omitted.) The child looked well; temperature was 99° F.; he complained of pain in the abdomen; the pain was paroxysmal in character and not localized in any special area. The mother was positive in her statements that the bowels had moved twice daily up to the previous twenty-four hours. Codein. 1/6 grain hourly, high injections and cold or warm applications were advised.

January 26; restless night, temperature 99° F., same paroxysmal pain, slight resistance of right rectus, bowels moved twice after injections, A. M. and P. M.

January 27; temperature 99.6° F., condition the same; restless with pain in paroxysms all night.

At 11:30 A. M., I saw the boy in consultation for the first time General condition excellent pulse good and about 80 to the minute. Respiration natural and not accelerated. Tongue clean, no odor to breath. Heart and lungs negative. Abdomen: both recti tense, no pains in the right iliac fossa; palpation negative, as was also examination per rectum. No retention of urine or delay in the urination. No evidence of shock or collapse. The patient insisted upon getting out of bed to use the chamber. Between the paroxysmal pains he would play with his toys and took great pride in blowing a fish horn. No blood or mucus in the stools at any time.

Symptoms. Pain referred to the umbilical region and tenderness in this area were constant. Pressure over McBurney's point negative. Colicky pains recurring at irregular intervals, and severe in type, caused the boy to roll about and cry out. Both recti tense.

There was some interference with the functions of the bowels as they did not act as readily as in health. No urgent symptoms being present, it was decided to await further developments. If no improvement occurred in twenty-four hours an exploratory laparotomy was suggested, the suspicion tending in the direction of a mild inflammation of the appendix.

January 28; temperature 100° F., pulse 104; P. M., temperature 99° F. Restless all night, pains in paroxysm continue. Two good fecal movements followed injections made by nurse. Dr. John F. Erdmann was now requested to see the patient in consultation and suggested an early exploratory operation.

January 29; temperature 99° F., pulse 110, very restless and in pain all night. Bowels moved well (distinct fecal masses) after injection. The necessary arrangements having been made the child was sent to Gouverneur Hospital and operated upon by Dr. Erdmann at 3:30 P. M.

The subsequent details, kindly furnished by Dr. Erdmann, are as follows:

"When I first saw the little patient, Unger, with Dr. Joseph Huber, he had all the manifestations of an appendicitis without any shock. He had had some socalled results from enemata. I suggested to them that the boy be submitted to operation as soon as possible. He was admitted to the hospital the next morning for operation, and when under ether, upon abdominal and lumbar palpitation, no tumor was found in the appendicular region, but upon subcostal palpation, a tumor about the size and absolutely the shape of a kidney was displaced, and could be brought down into the right iliac region. This tumor would slip back into the loin exactly as a floating kidney would. The abdomen was opened, with a view of exploration, through the right rectus. Digital examination detected a tumor involving the colon and cecum with a slight portion of the ileum. This tumor proved to be an intussusception, which was readily reduced; the appendix was removed, and the abdomen closed without drain. The patient made a perfect recovery, and was discharged to his home in ten days."

Case 2. Nellie, nine years old, was seen in consultation with Dr. Hymanson. The history was briefly as follows: Four days before, without any apparent cause, the child was taken with severe pains in the abdomen, more intense in the umbilical region. The

pains occurred in paroxysms, and at rather frequent intervals. She vomited several times daily; in the beginning the contents of the stomach were ejected, later on mucus and bile; no fecal odor noticed. As a rule constitpation existed. It was reported that since her illness the bowels had acted several times in consequence of the cathartics which had been administered by the mother. No history of blood in the stools.

Physical Examination. No heart or lung trouble. Liver and spleen normal. Abdomen retracted, both recti tense, pain and tenderness in the umbilical region; urination normal, rectal examination negative. No tumor evident on deep palpation in the lumbar or right iliac region.

The similarity of this case to the one referred to above suggested intussusception and operation was advised.

The child was thereupon sent to the Beth Israel Hospital, to the surgical service of Dr. A. E. Isaacs, for exploratory laparotomy.

For the further history, I am indebted to my colleague, Dr. A. E. Isaacs, to whom I desire to extend my thanks for the courtesy of being allowed to see the case on several occasions.

The same evening the child was chloroformed and as nothing abnormal was discovered in the abdomen or per rectum, and as the symptoms were not urgent, it was decided to await further developments. The following day blood was observed in the stools, the same paroxysmal pains recurred, pain and tenderness still persisted about the umbilical region. The same evening a large quantity of fluid blood was passed. Temperature 99° F., pulse 100-110, respiration 20-24.

February 28, 9 A. M., small movement (brownish fluid, with mucus and blood) very offensive. Still complained of pain. Temperature, pulse and respiration the same.

March 1, operation by Dr. Isaacs. Medial incision. Intussusception in ileocecal region readily reduced. Appendix removed. The subsequent progress, except for some local pain and a small abscess in the deeper part of wound, was uneventful.

In the cases referred to above, rigidity of the recti muscles with umbilical pain and tenderness were present as constant symptoms. Vomiting occurred occasionally. The bowels could be moved by high enemata. Paroxysmal, colicky pains occurred in both cases. The suffering during the attacks was extreme, afford-

ing a striking contrast to the peaceful state in the interval. The temperature was slightly elevated and the pulse but little accelerated.

A tumor was detected in the first case when the child was under narcosis, just prior to the operation, that is, on the fifth day. In the second instance a thorough examination under chloroform failed to reveal any swelling. At no time was any blood or mucus present in the stool of the boy. In the case of the girl, characteristic bloody stools were first noticed after the child had been examined under chloroform about the sixth day of her illness. No collapse or evidence of shock in either patient.

A detailed consideration of the salient points in the two histories may prove of value in assisting us in arriving at a positive diagnosis in future cases. Clinicians have for years recognized the import of *rigidity of the abdominal muscles with pain*. This point has been thoroughly discussed in an able article, from which, because of its importance, the following is abstracted: J. A. Blake (*New York M. J.*, Jan. 3, 1903) emphasizes the value of rigidity as an early diagnostic point and believes that pain and rigidity go hand in hand as the cardinal subjective and objective signs of commencing as well as advancing abdominal trouble. "Rigidity is the reflex spasmodic contraction of the muscles of the abdominal wall exerted, not only to protect the irritated peritoneum from influences acting from without the body, but also to restrain the movements of the viscera and thus produce rest. It is an active, constantly-acting spasm of the muscle not necessarily accompanied with swelling or tenderness. Its degree and extent are valuable as evidencing a corresponding degree and extent of abdominal trouble. When slight it may be confounded with the voluntary contraction of muscles to protect a tender viscus and hence, the manner of eliciting rigidity is important. Gentle pressure with the flat of the hand, thus gaining the confidence and diverting the attention of the patient, will give much more valuable information than strong, deep pressure."

A tumor, when present, is a sign of great importance. It must not be forgotten, that we may not be able to demonstrate its presence until anesthesia is resorted to. Now and then, during the characteristic colic or while palpating the abdomen in a suspected case, an erectile mass may appear at the site of the lesion. If a

tumor be present, it is apt to become more prominent under the condition referred to.

The pain is of two varieties. First, a constant pain with tenderness in the umbilical region; second, the recurring colicky attacks with evidence of extreme and acute suffering.

Text-books and clinical experience teach us that one or more of the diagnostic symptoms may be absent or not appear until late.

Paroxysmal colicky attacks in connection with *rigidity of the abdominal recti* and *localized pains* form a characteristic symptom complex. A consideration of these cardinal symptoms with the recent experience of the first case justified a positive diagnosis of intussusception in the second instance.

As a strange coincidence about this time, a girl of twelve years was admitted to the Beth Israel Hospital, presenting symptoms that were rather suspicious. A provisional diagnosis of intussusception had been made prior to her admission to the hospital. Her general condition was excellent. She had vomited some and had had severe abdominal pains, not paroxysmal in character, however. Pure blood had been passed per rectum. The abdomen was retracted and tender. The presence of a purpuric eruption upon the extremities revealed the true nature of the case and enabled us to exclude intussusception.

Appendicitis in children is frequently attended with pain in the umbilical region and rigidity of a rectus muscle. The pain, however, is of a different character, not necessarily paroxysmal. As a rule, there is but little difficulty in arriving at a proper diagnosis. The following instance, which occurred in the surgical service of my friend, Dr. H. M. Silver, at Gouverneur Hospital, is cited as an illustration.

N. L., aged ten years, Russian. Schoolboy. Admitted January 18, 1903. History: He has had no previous attacks. Digestion always good. About twenty hours before admission was seized with abdominal pains which in a few hours became worse on right side. Since beginning of attacks has eaten nothing, has vomited four times. Bowels moved twice in response to cathartics given at beginning of attack. Micturition normal. On examination right rectus muscle contracted, marked tenderness just below and to the right of umbilicus, very slight pain, and no marked rigidity of the muscles in the right inguinal region. No tumor felt. Ab-

domen somewhat distended, tympanitic. Temperature 103° F., pulse 138, respiration 30.

Operation. Incision through right rectus muscle just below and to right of umbilicus; when peritoneum was opened a large quantity of seropurulent fluid escaped. Mass of congested omentum found just below incision. When unfolded, it was found to contain the tip of the appendix which was gangrenous; the appendix was directed upward and inward toward umbilicus and was four inches in length. Greater part of appendix and cecum healthy. Small contraction in apex of appendix. Wound closed, convalescence normal.

TREATMENT OF IDIOPATHIC MEGACOLON IN CHILDREN. (Archiv für klinische Chirurgie, Heidelberg, 268: 45, 1951). The form of megacolon appearing in adults is usually of the symptomatic type. This form increased during the postwar period of starvation. It usually yields to conservative measures. The idiopathic form, appearing in children, which is usually called Hirschsprung's disease, presents a more difficult therapeutic problem. In this form conservative methods usually fail. Intervention on the abdominal sympathetic, which a decade or two ago represented the chief surgical methods, have failed and are now generally rejected. Today operations on the colon itself are again the preferred methods of surgical treatment. Before the neurosurgical era the resection of the dilated portions of the colon usually took the form of a left-sided hemicolectomy. Observations on the seven children discussed by this author corroborated the good late results obtainable with this method. However, since it does not appear to remove the cause there is a possibility of further progression of the dilatation of the colon in the proximal portions. If this happens, then total colectomy must be done. More recent investigations into the cause of typical Hirschsprung's disease, in which the lower sigmoid portion is contracted, have induced some to resect this contracted portion of the colon, with preservation of the anal sphincter. However, it still has not been completely proved that this difficult method removes the cause. In the idiopathic form, with dilated rectum, resection of the sigmoid portion or the left-sided hemicolectomy remains the method of choice for the present.—*Journal A.M.A.*

DEPARTMENT OF ABSTRACTS

FREEMAN, V.: POLIOMYELITIS IN ISLINGTON IN 1947, 1949 AND 1950. (British Medical Journal, 4724:151, July 21, 1951).

The author reports on three outbreaks of poliomyelitis including polioencephalitis. No relationship could be drawn between attack rates and social conditions. A low proportion of children (27.3 per cent) under 5 years were affected in 1947. In 1949 the proportion of children under 5 was 61.3 per cent and in 1950, 40 per cent. There was a relatively high incidence of left-arm paralysis in 1949, especially in children under two years, within 9-15 days after receiving inoculation in the left limb. This did not occur in 1947 or 1950. In 1949 most children under two were given combined alum-precipitated toxoid and pertussis vaccine; this was not the case in the other two outbreaks. In 1949, children given pertussis vaccine only were not affected proportionately in relation to those who received the combined vaccine. No familial or apparent contact cases were detected in 1947. Such cases, however, did occur in 1949 and to a greater degree in 1950.

MICHAEL A. BRESCIA, M.D.

NEMIR, R. L. AND ISRAEL, J.: PNEUMOCOCCIC MENINGITIS IN INFANTS AND CHILDREN. COMBINED THERAPY USING PENICILLIN AND SULFONAMIDE. (Journal American Medical Association, 147:213, Sept. 15, 1951).

The authors report on 15 cases of pneumococcic meningitis in infants and children ranging in age from 4 weeks to 11 years treated between May 1943 and December 1949. Using the combined therapy of sulfonamide and penicillin, 14 recovered from the acute infection and only one of these had residua. The fifteenth patient was moribund on admission and died 27 hours later. The authors emphasize the difficulty of diagnosing pneumococcic meningitis in infants. Neurological signs may be absent early in the disease. Physical examination is often deceptive. The commonest finding in infants under a year of age was a bulging fontanel. In all patients an effort was made to locate the focus for the pneumococcic infection. This included clinical as well as x-ray study of the chest, mastoid and nasal sinuses. All patients were given penicillin intramuscularly and sulfadiazine orally.

Fourteen of the 15 patients received intrathecal penicillin as well. In two very ill patients, specific antipneumococcus serum was also given. It is the authors' opinion that intrathecal therapy is indicated when the factors influencing the prognosis are unfavorable.

MICHAEL A. BRESCIA, M.D.

REISS, F. AND DOHERTY, D. D.: PODOPHYLLUM RESIN IN TREATMENT OF TINEA CAPITIS. (Journal American Medical Association, 147:225, Sept. 15, 1951).

A report is submitted of 121 cases of tinea capitis treated with a 0.2 per cent resin of podophyllum ointment alone and in combination with x-ray epilation. Fifty-six patients were cured, 26 with x-ray epilation combined with podophyllum resin treatment and 30 with podophyllum resin treatment alone, 19 improved and 21 showed no change. The agent was useful in some cases of tinea capitis due to M. audouini, M. lanosum, T. crateriforme and T. sulfureum. The length of time required to achieve clinical cure in those cases in which podophyllum resin ointment was used alone did not differ appreciably from the length of time required in those cases in which both podophyllum resin and x-ray epilation were used.

AUTHORS' SUMMARY.

MCKEEVER, G. E.: MYASTHENIA GRAVIS IN A MOTHER AND HER NEWBORN SON. (Journal American Medical Association, 147:320, Sept. 22, 1951).

The author reports a case of myasthenia gravis in a newborn. This is the seventh such case recognized in the neonatal period. All seven infants were born of myasthenic mothers. The symptoms were manifest in all by the third day of life. Two of the babies died. The diagnosis was confirmed in five cases by the response to neostigmine. The case reported was that of a newborn who, when seen 22 hours after birth, had a weak cry and masklike facies. He did not use the face muscles to any extent when crying. He was generally inactive and nursed poorly, part of the formula being regurgitated through the nose. The baby was given 1.0 mg. of neostigmine bromide in water by mouth. After 20 minutes the cry was more vigorous and more facial expression was used in crying. He nursed better than during previous feedings. The baby did not require neostigmine after 15 days of life.

MICHAEL A. BRESCIA, M.D.

SHANKS, R. A.: AUREOMYCIN AND CHLORAMPHENICOL IN INFANTILE DIARRHEA. (British Medical Journal, 4726:272, Aug. 4, 1951).

Aureomycin or chloramphenicol was used in alternate cases of a series of 92 consecutive infants admitted with infantile diarrhea during a period of 8 months. The controls were given penicillin and/or sulfonamides as indicated. No significant difference was noted between either of the treated series and the controls. It is suggested that any wide-range antibacterial substance is likely to have a definite but limited value in the treatment of infantile diarrhea. So far, however, it seems that no available antibiotic has a specific curative effect upon this disease. This may be regarded as an additional factor in favor of a non-bacterial causation of infantile diarrhea. AUTHOR'S SUMMARY.

BANH, D. B. AND SAN, N. N.: STUDIES ON PHYSIOLOGICAL JAUNDICE OF THE NEWBORN. (Presse Médicale, 59:892, June 23, 1951).

Physiological jaundice of the newborn is based primarily on rapid hemolysis of the blood cells. However, this hemolysis can be influenced by weakness, prematurity, chilling, trauma of labor and immaturity of the liver. Of 50 cases of icterus there were 33 (66 per cent) in infants weighing less than 3 kg., 12 (24 per cent) in infants between 3 kg. to 3.5 kg. and 5 (10 per cent) in those over 3.5 kg. Regarding the trauma of labor, they found that primipara in labor more than 12 hours, 72 per cent of their infants were icteric whereas only 28 per cent of those who were in labor less than 12 hours became icteric. Of the multipara that were in labor more than 5 hours, 79 per cent of their infants became icteric whereas only 21 per cent became icteric if labor were less than 5 hours. No relationship was found between physiologic jaundice and the blood type of either parent.

MICHAEL A. BRESCIA, M.D.

COCKBURN, W. C.; HARRINGTON, J. A.; ZEITLIN, R. A.; MORRIS, D. AND CAMPS, F. E.: HOMOLOGOUS SERUM HEPATITIS AND MEASLES PROPHYLAXIS. A REPORT TO THE MEDICAL RESEARCH COUNCIL. (British Medical Journal, 4722:6, July 7, 1951).

Of 10 recipients of the same batch of plasma for measles pro-

phylaxis, 7 developed a severe form of jaundice and 3 of the 7 died. One of the patients who died had symptoms of encephalitis without apparent jaundice. Part of the same parent batch of plasma was fractionated and gamma globulin was prepared from it. Of 58 recipients of this gamma globulin, only one mild case of jaundice occurred—in a boy aged 12 who had received 8.0 cc. This case is considered one of homologous serum hepatitis resulting from the administration of gamma globulin prepared from a batch of plasma shown to be icterogenic. The risk of homologous serum hepatitis following parenteral inoculation of gamma globulin prepared from an icterogenic pool of plasma appears to be much less than that following the use of unfractionated plasma, but it cannot be ignored. Children under 5, who have been held to be relatively insusceptible to homologous serum hepatitis, may in certain circumstances develop the disease, which may prove fatal. Owing to the long incubation period, cases of homologous serum hepatitis may readily be missed, and in all cases of jaundice a history of previous injections should be inquired into. In some cases with rapid liver damage the patients may show predominantly neurological symptoms with no apparent jaundice during life.

MICHAEL A. BRESCIA, M.D.

KUGELMASS, I. N.: CORTISONE IN ALLERGIC PURPURA OF CHILDREN. (New York State Journal of Medicine, 51:2504, Nov. 1, 1951).

Four children with allergic purpura of established etiology were treated effectively with cortisone. Two of the patients with thrombocytopenia, as an unusual manifestation of allergic purpura, responded promptly to cortisone following the rapid rise of blood platelets and return to normal levels within a week. Gastrointestinal troubles cleared within 36 hours, purpuric manifestations within 48 hours, capillary frigility within 72 hours, and blood in urine and stools in 84 hours in the Henoch type of allergic purpura. Appetite improved promptly, fever dropped in 24 hours, joint pains disappeared in 48 hours, purpura faded in 96 hours, and sedimentation rate was normal in 5 days in Schonlein type or allergic purpura. Mild manifestations of allergic purpura were in evidence for weeks after the withdrawal of cortisone.

AUTHOR'S SUMMARY.

BAIR, G.: CHRONIC VITAMIN A POISONING. REPORT OF A CASE. (Journal American Medical Association, 146:1573, Aug. 25, 1951).

The author reports a case of chronic vitamin A poisoning in a 28-month-old white male child whose main complaints were painful swellings of the left foot, right forearm and temporal regions. He also complained of severe itching of the back and arms. The child craved and ate butter and showed a preference for milk, cheese, eggs, liver, carrots, tomatoes and sweet potatoes. His appetite was good until the onset of symptoms, after which he rejected all foods. His vitamin intake was supposed to be 20 drops of percomorph liver oil but instead he was given one teaspoonful daily. Examination revealed a fretful and irritable child. His face was puffy, the lips were dry and fissured. Thin serous fluid ran from the nose. Bilateral temporal swellings, larger on the left, were visible and palpable. A fusiform swelling covered the fifth left metatarsal. The dorsa of both feet were edematous, and the right forearm was swollen. The entire body was tender to touch. Blood vitamin A level was 1040 I.U. (normal 50-150 I.U.). X-rays of the bones revealed varying degrees of cortical thickening and hyperostosis. The prognosis in recognized cases is excellent after stoppage of excess vitamin A.

MICHAEL A. BRESCIA, M.D.

SABIN, A. B.: PARALYTIC CONSEQUENCES OF POLIOMYELITIS INFECTION IN DIFFERENT PARTS OF THE WORLD AND IN DIFFERENT POPULATION GROUPS. (American Journal of Public Health, 41:1215, Oct. 1951).

Experimental observations on other neurotropic viruses, as well as epidemiological observations on human beings, suggest that genetic factors are of importance in determining whether poliomyelitis infection shall result in paralysis, minor illness, or in apparent acquired immunity. The extraordinarily high paralytic attack rates among certain highly inbred and isolated population groups in the Arctic, as well as in the tropics, may very well be a reflection of the genetic constitution of that particular population. The author concludes that epidemics are caused by strains of virus of unusual virulence and that during the interepidemic years strains that are immunologically identical but of low virulence are also

widely disseminated. The incidence of paralytic poliomyelitis during interepidemic years is relatively low even in communities in which poliomyelitis is an important problem. The frequency with which epidemics strike a given community actually determines whether, over the years, the incidence of the paralytic poliomyelitis shall be high or low. The low incidence of paralytic poliomyelitis, even among the children of the Far East and Africa, at a time when virulent virus is known to be in their midst, cannot be attributed to subclinical immunization of infants. The incidence of paralytic poliomyelitis is inversely proportional to the extensiveness of viral dissemination. In general, the poorer the population, its standard of living and sanitation, the more extensively is poliomyelitis virus disseminated among them and the lower is the incidence of paralytic poliomyelitis when virulent strains of virus come their way. Experimental observations on infections of monkeys by the oral route suggest that small doses of virus can give rise to immunity with only a small risk of paralysis. Population groups which live under conditions that are especially conducive to the continuous dissemination and consumption of small doses of virus may thus be in the best position to acquire poliomyelitis immunity without paralysis. MICHAEL A. BRESCIA, M.D.

MOFFETT, J. D. AND BANKS, R.: PROLAPSE OF THE URETHRA IN YOUNG GIRLS. (Journal American Medical Association, 146:1288, Aug. 4, 1951).

The authors report on four cases of prolapse of the urethra in Negro girls ranging in age from three to seven years. The condition is of unknown etiology and is characterized by urethral bleeding, varying degrees of dysuria and a mass presenting at the urethral meatus. Catheterized urine specimens, cystoscopy and intravenous urography were normal. The diagnosis of this condition offers no problem if one remembers that the prolapse involves the entire circumference of the meatus. In a true prolapse the lumen is always directly in the center. Treatment has consisted of preoperative hot sitz baths until a line of demarcation has been established between normal urethral mucosa and the inflamed prolapsed mucosa. This is followed by a complete circular excision of the prolapsed mucosal cuff with the cautery loop along this line of demarcation, so that the entire prolapsed portion is removed. This excised portion is a 360-degree cuff of tissue with a definite lumen. MICHAEL A. BRESCIA, M.D.

HOEFER, P. F. A.; COHEN, S. M. AND GREELEY, D. McL.: PAROXYSMAL ABDOMINAL PAIN. A FORM OF EPILEPSY IN CHILDREN. (Journal American Medical Association, 147:1, Sept. 1, 1951).

The authors report on a study of 31 children who complained mainly of periumbilical and epigastric pains. The pains were sudden in onset, severe and described as knife-like or colicky. The pain has been associated in most instances with other gastrointestinal symptoms, such as anorexia, nausea, vomiting, diarrhea or constipation. Sixteen of the patients fell asleep after an attack of abdominal pain. Twelve said they experienced headache associated with an attack. Nine had fever with the attacks and seven had drooling and sweating. In addition to the attacks of abdominal pain, many of the children have shown abnormal traits. In 17 there was an abnormal degree of irritability and other behavior disorders. In 12 there were multiple vasomotor disturbances, such as blanching, flushing and lability of blood pressure. In four patients some of the attacks have been associated with cyclic vomiting. Electroencephalographic studies showed that all the patients but one had abnormal cerebral electrical activity. Frank epileptic manifestations occurred in nine of the entire group of 31 patients.

MICHAEL A. BRESCIA, MD.

NELSON, J. AND GOLDSTEIN, N.: NATURE OF WATERHOUSE-FRIDERICHSEN SYNDROME. REPORT OF A CASE WITH SUCCESSFUL TREATMENT WITH CORTISONE. (Journal American Medical Association, 146:1193, July 28, 1951).

The authors report a case in an 11-year-old boy of fulminating meningococcic sepsis complicated by profound collapse, anuria and hypoglycemia. After the administration of dextrose in normal saline, plasma and adrenal extract had proved unavailing, the administration of cortisone was followed by dramatic recovery from the state of shock. This supports the hypothesis that adrenal damage plays a central role in the determination of the clinical picture of the syndrome. It is further suggested that the impact of infection on the adrenal glands, together with their exhaustion and the breakdown of their function, may have a critical part in the outcome of severe or uncontrolled infections.

MICHAEL A. BRESCIA, M.D.

BOOK REVIEWS

THE KIDNEY: STRUCTURE AND FUNCTION IN HEALTH AND DISEASE. By Homer W. Smith, A.B., Sc.D., M.S. Cloth. Illustrated. Pp. 1050. Price $12.50. New York,: Oxford University Press, 1951.

This is an extremely valuable and important book written by an outstanding man in the field of renal physiology of both man and animal. This book brings us up to date in the study of renal function from fishes through man with ease, clarity and understanding. The anatomy is reviewed, including a complete study of clearances in minute detail involving substance of tubular reabsorption and tubular excretion. Filtration rate is carefully discussed and the development and reliability of inulin as a measurement of glomerular filtration is evaluated. Part II takes up the pituitary gland in relation to excretion of water and the adrenals in relation to sodium. The adrenal corticoids and other electrolytes are fully examined. This part closes with a presentation on acid-base equilibrium in plasma and urine. Renal hemodynamics are completely discussed and in this regard it would be worth while to quote the following: "The chief consideration in glomerular-tubular balance appears to be maintenance of salt and water balance. But, apart from implications involving the extra-cellular fluid, how these changes in vasculature are initiated remain a mystery, and it is therefore impossible at the present time to interpret the changes in pathological states such as essential hypertension and congestive heart failure." The variation in circulating plasma, filtration rate, renal function and other measurements are considered in many non-renal diseases. These data are of value to the renal physiologist and research student. Renal function in disease comprises the final part of the book. The chapters on cardiac failure and essential hypertension are very valuable. Acute renal failure is discussed, its etiology examined and the localized area of pathological function in the renal tubule is presented. This text is a prodigious work. It is by no means a book to be lightly read but a text to be studied carefully and used as a reference volume. This book contains the answers to many perplexing problems.

H. FRUCHTER, M.D.

GROWTH AND DEVELOPMENT OF CHILDREN. By E. H. Watson, M.D. and G. H. Lowrey, M.D. Cloth. Illustrated. Pp. 260. Price $5.75. Chicago,: The Year Book Publishers, Inc., 1951.

This comparatively small volume is full of interesting facts which are presented systematically. For this reason, it becomes a valuable book for easy reference regarding matters of growth and development. The author's approach is sensible as witness their attitude toward posture in which they state: "We cannot assume that there is a single correct posture any more than we can assume that there is a single correct height and weight." Their attitude toward that ever-present so-called feeding problem is salutary: "Unless a child has some organic disease he will present a feeding problem only because some adult has tried, usually in early infancy, to impose his own ideas of how much should be eaten. An infant . . . has the same physiologic variations in appetite as an adult. Solid foods should not be forced in infancy; if they are, refusal of them will often spread to include refusal of all food. In later infancy and childhood certain foods will be refused in spells, and these refusals should be respected. It is important throughout childhood that mealtime be a happy time in order to insure good habits." It was reassuring to note that mild forms of milia and sudamina may be apparent on the nose and cheeks throughout the neonatal period; that occult blood may be found in the stools of the newborn for about four days and that albumin is frequently found in the urine of the newborn. In mentioning the fact that the prepuce is usually adherent to the glans in the newborn, the only elaboration made was that it remains so for some time after birth. A more detailed description of how long it actually takes for the prepuce to detach itself from the glans and when can the prepuce be retracted over the glans was indicated. In reference to immunity the authors state that the reaction to the Schick test performed during the neonatal period is frequently negative although no antitoxin is found in the circulation. This statement is not accurate since it has been shown that infants born of non-immune mothers (Schick positive) are themselves at birth Schick positive. The ability of the newborn skin to react to the diphtheria toxin although less sensitive than that of the older infant can nevertheless be demonstrated. Chapter VI on behavioral development is especially good. MICHAEL A. BRESCIA, M.D.

ELECTROKYMOGRAPHY. By Various Authors. Paper. Pp. 209. Price $0.75. Public Health Publication No. 59, Washington, D. C., 1951.

This text is the published proceedings of the first conference on electrokymography. The papers are presented by outstanding men in this field and are well discussed by this same group following the paper presentation. The techniques are well described, densograms and electrokymograms are discussed at length in various recordings of the individual chambers of the heart and great vessels, pulmonary vessels and the lungs. Various clinical and physiological problems, such as intra-atrial pressure, asynchronism of the heart sounds in right and left bundle branch block, localization of cardiovascular murmurs, measurement of cardiac output, are discussed by this new method. This conference adds another laboratory procedure to the already great abundance of new techniques in cardiovascular study. One like angiocardiograms belongs only in the hands of a few. For those then, this text is an important contribution. H. FRUCHTER, M.D.

PATHOLOGIC PHYSIOLOGY. By William Sodeman, M.D., Editor. Cloth. Illustrated. Pp. 775. Price $12.00. Philadelphia: W. B. Saunders Co., 1950.

This book has been written by many writers outstanding in their respective fields. It embraces a tremendous amount of material both clinical and in the basic sciences. It is therefore extremely valuable to all students of medicine. The underlying mechanisms of the normal and the changes occurring in disease are well developed and presented to the reader in a fashion so that he can grasp the physiological importance of organs and systems, in health and disease. The book is well illustrated and the charts are extremely interesting. If this text has a fault, it may be said that too much knowledge has been crowded into too small an area. For this reason the presentation is sometimes not readily understandable. This is an extremely valuable book and is well worth reading by all students of medicine. HAROLD FRUCHTER, M.D.

Medal of Honor

Major General William F. Dean, of Berkeley, California—Medal of Honor. In the hard early days of the Korean War, when it was Red armor against American rifles, General Dean chose to fight in the most seriously threatened parts of the line with his men. At Taejon, just before his position was overrun, he was last seen hurling hand grenades defiantly at tanks.

General William Dean knew in his heart that it's every man's duty to defend America. You know it, too. The General's job was in Korea and he did it superbly well. Your defense job is here at home. And one of the best ways to do that job is to start right now buying your full share of United States Defense* Bonds. For remember, your Defense Bonds help keep America *strong*, just as soldiers like General Dean keep America safe. And only through America's strength can your nation . . . and your family . . . and you . . . have a life of security.

Defense is your job, too. For the sake of all our servicemen, for your own sake, help make this land so powerful that no American again may have to die in war. Buy United States Defense* Bonds now—for *peace!*

Remember when you're buying bonds for defense, you're also building personal cash savings. Remember, too, if you don't save *regularly*, you generally don't save at all. So sign up in the Payroll Savings Plan where you work, or the Bond-A-Month Plan where you bank. For your country's security, and your own, buy United States Defense Bonds!

U.S. Savings Bonds are Defense Bonds - Buy them regularly!

The only broad-spectrum antibiotic available in concentrated drop-dose potency, Crystalline Terramycin Hydrochloride Oral Drops provide 200 mg. per cc.; 50 mg. in each 9 drops. Indicated in a wide range of infectious diseases, Terramycin Oral Drops are miscible with most foods, milk and fruit juices, affording optimal ease and simplicity in administration.

Supplied | *2.0 Gm. with 10 cc. of diluent, and calibrated dropper.*

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